

## NOTES ON BATS FROM THE MEXICAN STATE OF QUERETARO

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**ABSTRACT.** Records of 20 species of bats from the Mexican State of Queretaro are herein reported. Seven species (*Anoura geoffroyi*, *Choeronycteris mexicana*, *Sturnira ludovici*, *Desmodus rotundus*, *Myotis yumanensis*, *Pipistrellus hesperus*, and *Enderma maculatum*) are recorded from Queretaro for the first time. The range of the spotted bat, *Enderma maculatum*, is extended 575 air miles to the southeast from Navarro, Durango. Pertinent information regarding natural history of certain species is given.

Queretaro is interesting biogeographically because the southwestern portion of the state lies on the Mexican Plateau whereas the northern portion is associated with the western slopes of the Sierra Madre Oriental. Consequently, it has a variety of different ecological situations, including tropical deciduous and tropical evergreen forests at the easternmost edges of the state, the pine-oak forests of the numerous scattered montane areas and xeric, thorn shrub, and desert in the northern and southern areas.

Perusal of the pertinent literature reveals but few scattered reports and observations concerning the distribution and natural history of bats in Queretaro. Nelson and Goldman made a collection of bats from Jalpan on August 25, 1896 (Don E. Wilson, pers. comm.). It included nine *Antrozous pallidus* (USNM nos. 81621–81628), seven *Leptonycteris sanborni* (81629–81635), five *Tadarida brasiliensis* (81636–81640), and two *Myotis velifer* (81641–81642). H. O. Wagner collected three specimens of *Antrozous pallidus* (Univ. Michigan Mus. Zool. nos. 93559–93561) at Cadereyta, 2100 m, on July 17, 1948 (Emmet T. Hooper, pers. comm.). Malaga Alba and Villa-R. (1957) evidently were the first to publish records of bats from the state when they reported *Antrozous pallidus pallidus* from Jalpan and Cadereyta. Hall and Kelson (1959) list only the record reported by Malaga Alba and Villa-R.; they indicate that several chiropteran species possibly occur in Queretaro but they list no specimens examined for any of them. In his monograph on the bats of Mexico, Villa-R. (1967) mentioned the earlier record of *Antrozous* and listed specimens of *Leptonycteris nivalis*, *Lasiurus borealis*, *Antrozous pallidus*, and *Tadarida brasiliensis*. Davis (1969, 1970) first recorded fruit bats, *Artibeus jamaicensis yucatanicus* and *Artibeus aztecus aztecus*, from Quere-

taro. Finally, Spenrath and LaVal (1970) reported *Pteronotus personatus*, *Glossophaga soricina*, *Sturnira lilium*, *Artibeus lituratus*, and *Molossus ater* from the vicinity of Jalpan in northern Queretaro. Thus, a total of 13 species of bats representing four families are on record.

From 1970 to 1972 several field expeditions to Queretaro were conducted by personnel of the Department of Wildlife and Fisheries Sciences, Texas A and M University. These trips resulted in the capture of 134 bats from six different localities in the state—several places near (1) Jalpan and (2) El Lobo in northern Queretaro; (3) Pinal de Amoles, (4) Peña Blanca, and (5) San Joaquin in the central part of the state; and (6) Rio Galindo in the southern sector. The vegetation at Jalpan, El Lobo, Pinal de Amoles, and Peña Blanca is described by Dixon, Ketchersid, and Lieb (1972) in their account of the herpetofauna of Queretaro. San Joaquin is on the eastern edge of the Mexican Plateau in east-central Queretaro. The vegetation consists of drooping-needle pine, juniper, acacia, and madrona which cover the dry rocky canyons of the area. The Rio Galindo is a small river one-half mile south of Hacienda Galindo at 6500 ft. Tall cypress trees overhang the river; the major plants along the banks include agave, mesquite and other thorny shrubs, and willow trees. Among the specimens thus accumulated are 15 species of bats, seven of which are new to the fauna of the state. In the accounts beyond, which include all of our Queretaro specimens, measurements are in millimeters and all place-names refer to localities in Queretaro.

*Glossophaga soricina leachii* (Gray, 1844).—six females were netted in a banana grove at

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Hacienda X-Conca, 2 mi SSE Conca (16 mi NNW Jalpan), 2000 ft, on 29 December 1970. On 4 January 1972, five females and one male were collected at this same locality. None of the female specimens collected evidenced gross reproductive activity. Other species captured at Hacienda X-Conca on the dates mentioned included *Anoura geoffroyi*, *Sturnira lilium*, *S. ludovici*, *Desmodus rotundus*, *Artibeus literatus*, and *Molossus ater*.

*Anoura geoffroyi lasiopyga* (Peters, 1868).—One male and one female were netted 1.9 mi W El Lobo, 5400 ft, and at Hacienda X-Conca on 4 June 1970 and 29 December 1970, respectively. The specimen from El Lobo was netted over a small sink hole. These specimens represent the first records of occurrence for this species from Queretaro. The nearest locality is 5.6 km NW Xilitla, San Luis Potosí (Spennath and LaVal, 1970).

*Choeronycteris mexicana* Tschundi, 1844.—One male specimen was collected 5 August 1972 at a place 12.4 mi WSW San Joaquin. This specimen, along with one *Artibeus aztecus*, was captured at the bottom of a dry rocky canyon covered with drooping-needle pine, juniper, acacia, and madrona. This specimen represents the first record of this species from the state.

*Leptonycteris sanborni* Hoffmeister, 1957.—On 19 May 1972, a male was obtained over a shallow pool near a steep cliff on the banks of the Rio Extoras, 1 mi NE Peña Blanca, 4450 ft. The Peña Blanca area supports desert vegetation with a small gallery forest of trees confined to the banks of the river. Other bats collected at this same locality include *Desmodus rotundus*, *Pipistrellus hesperus*, *Tadarida brasiliensis*, and *Euderma maculatum*. Another specimen, a male, was captured in a dry stream bottom in an area where sweet gum, oak, walnut, and several lush shrubs are the dominant vegetation 7 mi ENE Pinal de Amoles, 6000 ft. These two specimens represent the first published records of *L. sanborni* (as defined by Davis and Carter, 1962) from Queretaro. The average length of the third metacarpal, and the first, second, and third phalanges of the third digit of our two specimens are 50.1, 14.1, 23.8, and 10.4, respectively.

*Sturnira lilium parvidens* Goldman, 1917.—Specimens were netted at the following localities: Hacienda X-Conca, 5(2 females, 3 males); 2 mi NW Conca, 5(4 males, 1 female); 7 mi ENE Pinal de Amoles, 2 females; and Rio Galindo, 1 male. The specimens from the vicinity of

Conca and Pinal were obtained in habitat discussed in the accounts of *Glossophaga soricina leachii* and *Leptonycteris sanborni*, respectively. The specimen at Rio Galindo was netted over a deep pool of water under large cypress trees. None of the females evidenced reproductive activity.

*Sturnira ludovici ludovici* Anthony, 1924.—Twenty-one specimens (12 males, 9 females) were netted at Hacienda X-Conca on 4 and 5 January 1972. On 5 January, two females were netted 2 mi NW Conca. These specimens constitute the first records for Queretaro. None of the females showed signs of reproductive activity.

*Artibeus jamaicensis yucatanicus* J. A. Allen, 1904.—Two females were netted over a small pool of water in a rocky stream bottom 5 January 1972, 2 mi NW Conca, 2300 ft. Other bats obtained at this site were *Sturnira lilium*, *S. ludovici*, *Artibeus lituratus*, and *A. aztecus*. Twenty specimens (9 males and 11 females) were also collected at Hacienda X-Conca under conditions reported earlier in this report. None of the females at either locality evidenced signs of reproductive activity.

*Artibeus aztecus aztecus* Andersen, 1893.—Seven specimens (3 males and 4 females) were captured on 5 January 1972 at 2 mi NW Conca, 2300 ft, in habitat previously discussed for *A. jamaicensis yucatanicus*. Three specimens (2 males and 1 female) were caught at Hacienda X-Conca and another male was collected 12.4 mi WSW San Joaquin. None of the females showed evidence of reproductive activity. The only other record of this species from Queretaro is from 20 mi E Landa, 5400 ft (Davis, 1969). The elevations at which our specimens were taken apparently represent the lowest recorded for this species. Previously, *A. aztecus* had not been recorded at elevations lower than 3300 ft (Davis, 1969).

*Artibeus lituratus palmarum* J. A. Allen and Chapman, 1897.—Two females were obtained at Hacienda X-Conca in habitat discussed in the account of *Glossophaga soricina leachii*. Three specimens (2 females and 1 male) were obtained 2 mi NW Conca in habitat described in the account of *A. jamaicensis yucatanicus*. The females evidenced no sign of reproductive activity.

*Desmodus rotundus murinus* Wagner, 1840.—Vampire bats have not previously been recorded from Queretaro. On 5 and 7 June 1970, nine specimens (7 males and 2 females) were captured 10 mi N Jalpan in nets set across the Rio

Jalpan. One of the females was pregnant (embryo 22 in the crown-rump length); four of the males had scrotal testes. On 29 December 1970, D. W. Coon netted 5 males and 5 females at Hacienda X-Conca. In these specimens, the testes of the males were scrotal and the uteri of three females were swollen. On 17 May 1972 seven vampires (4 females and 3 males) were obtained 1 mi NE Peña Blanca. One of four females was pregnant (embryo 41 in crown-rump length). Apparently vampire bats are common throughout Queretaro and breed throughout the year.

*Myotis yumanensis lutosus* Miller and G. M. Allen. 1928.—Two females were obtained on 21 May 1972 at Rio Galindo. These specimens represent the first record for Queretaro.

*Pipistrellus hesperus maximus* Hatfield, 1936.—Two males were captured 1 mi NE Peña Blanca. These represent the first record for Queretaro.

*Euderma maculatum* (J. A. Allen), 1891.—One specimen, a male with small abdominal testes, was obtained 1 mi NE Peña Blanca on 19 May 1972. This specimen, the first recorded from Queretaro, was netted over a shallow pool next to a steep cliff along the Rio Extoras. Only three other specimens of the spotted bat, all from Navarro, Durango (Gardner, 1965), have been reported from Mexico. Peña Blanca is more than 575 air miles southeast of Navarro. The occurrence of *Euderma* at this locality suggests this rare bat may occur throughout the Mexican Plateau. Measurements of our specimen are: total length, 139; length of forearm, 52.6; length of skull, 19.7; zygomatic breadth, 11.0; and cranial depth, 8.6.

*Tadarida brasiliensis mexicana* (Saussure, 1860).—On 19 May 1972, six adults (4 females, 2 males) were obtained 1 mi NE Peña Blanca. Three of the four females were pregnant (embryos 13, 12 and 7 in crown-rump length). The only other record of this species from Queretaro is a single specimen from San Juan del Rio (Villa-R., 1967).

*Molossus ater nigricans* Miller, 1902.—Five specimens (3 males, 2 females) were mist-netted under large cypress trees at Hacienda X-Conca on 4 January 1972; none of them evidenced reproductive activity. Spenrath and LaVal (1970)

reported six additional specimens from the vicinity of Jalpan.

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